



Tutorial for using the CNDDDB layer in the BIOS 5 “CNDDDB & Spotted Owl Data Viewer”



California Department of Fish and Wildlife
California Natural Diversity Database
August 2013

The [CNDDDB & Spotted Owl Data Viewer](#) is another option for accessing the California Natural Diversity Database (CNDDDB) information available in RareFind. With the viewer you can view data spatially, add labels, and print maps without the need to have GIS software installed on your computer. More complex spatial analysis and data manipulation will still require the use of a full GIS in conjunction with RareFind.

Updates to the new BIOS 5 data viewer released in 2013 include updated base maps and aerial imagery, and more robust tools to filter and view CNDDDB data (Instant Filter and Layer Filter), in addition to a new streamlined map interface.

Additional BIOS data viewer support is also available in the [BIOS User Guide](#) and the [BIOS Frequently Asked Questions](#).

Contents

Standard BIOS 5 Tools	2
Adding Layers	2
Displaying Layers	3
Activating a Layer	4
Navigating	5
Identifying Features	6
Filtering Element Occurrences	7
Instant Filter	7
Layer Filter	8
Selecting Element Occurrences	9
Selecting EOs – spatial selection	9
Selecting EOs – query selection	11
Using Selected Features	12
Reports	12
Export Selected Records From BIOS to RareFind	13
Export Selected Records From RareFind to BIOS	14
Create PDF of Map & Data	16
Appendix 1: Operator Descriptions for Query Builder & Layer Filter	18
Appendix 2: Layer Filter examples	19

Standard BIOS 5 Tools

The new BIOS 5 map and data viewer still maintains the tools that were available in BIOS 4:

- Add Data Layers
- Search Layers
- Identify features
- Query Builder
- Select
- Point Info
- GeoFind
- Bookmark
- Measure
- Add Label
- Print/PDF
- Metadata

Additionally, BIOS 5 has a suite of new features and tools for interacting with spatial data:

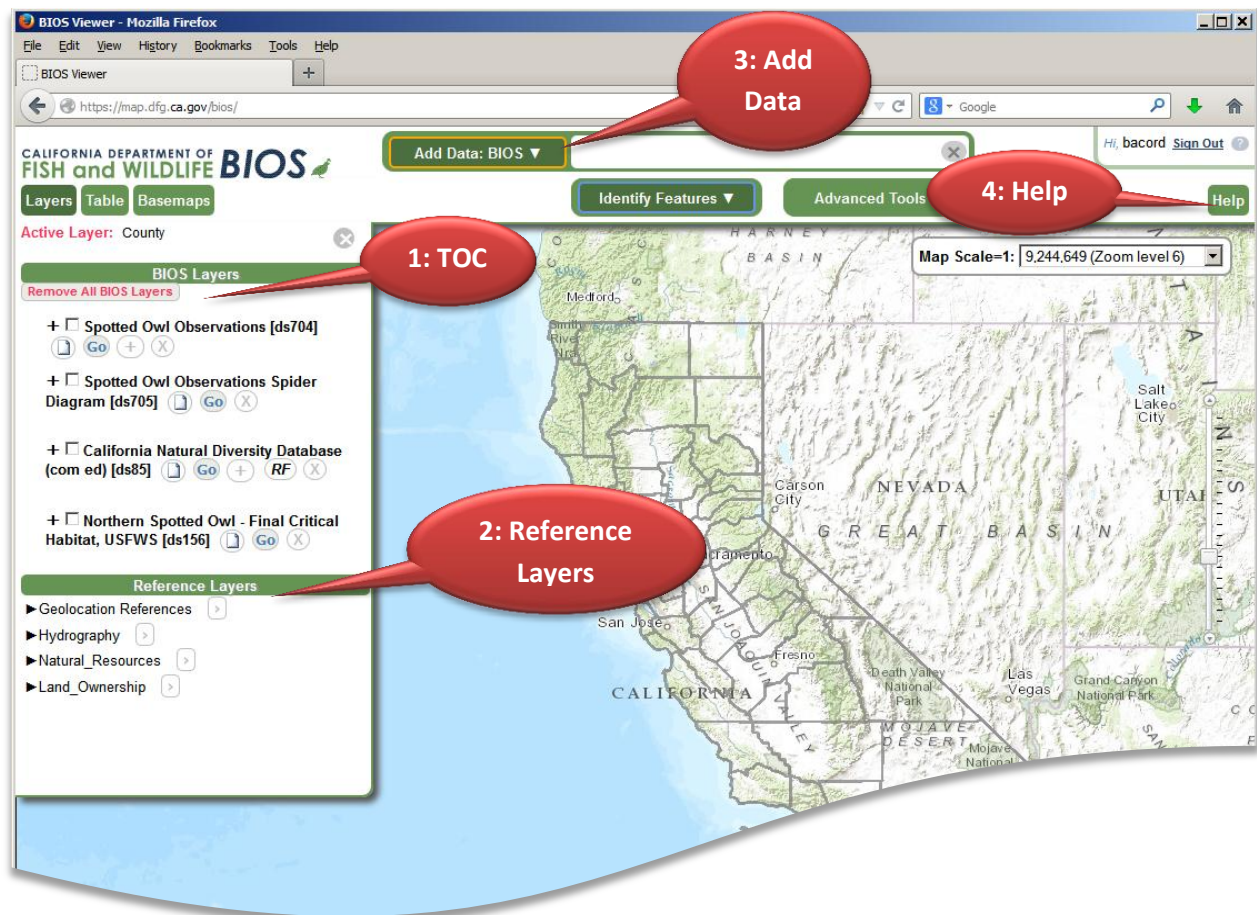
- Basemaps/imagery
- Add KML layer
- Add Map Service
- Locate Address
- Layer Filter
- Waypoints Tool

The use of these tools is covered in the [BIOS 5 Data Viewer User Guide](#) which can be viewed under the “Help” icon in the upper right of the BIOS 5 map viewer.

Adding Layers

The CNDDDB & Spotted Owl Data Viewer comes preloaded with the following data sets in the BIOS Layers portion of the Table of Contents (TOC) [1]:

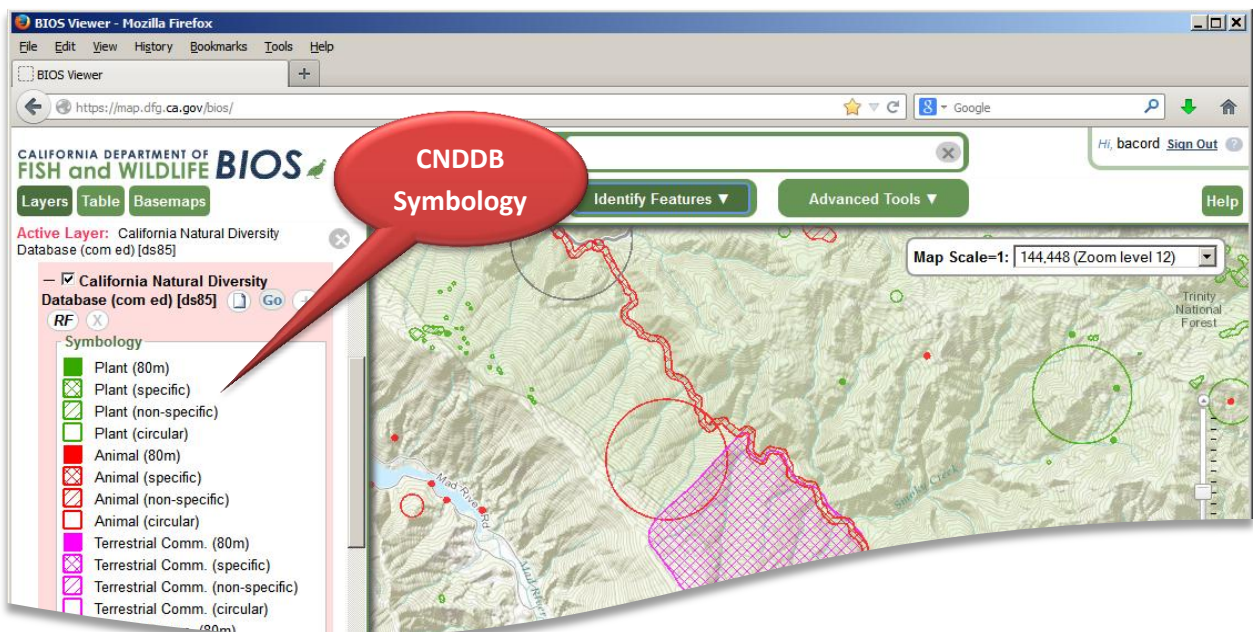
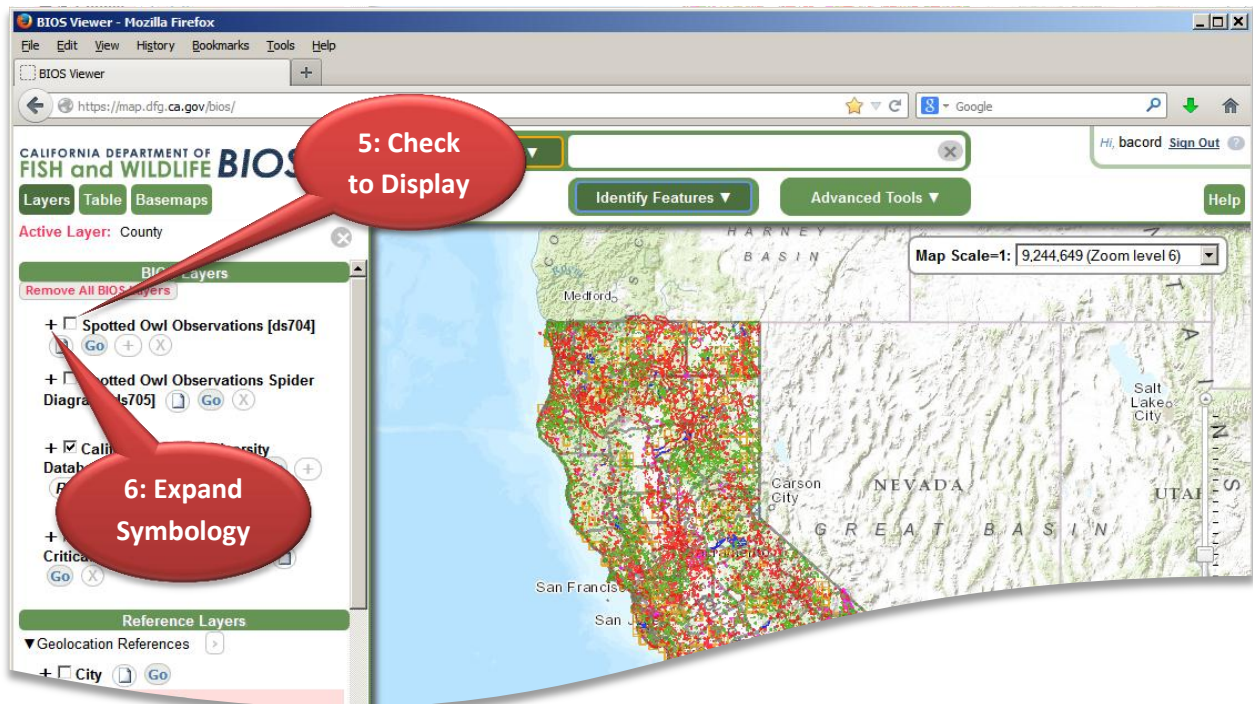
- CNDDDB (ds45 or ds85)
- Spotted Owl Observations (ds704)
- SPOW Observations Spider Diagram (ds705)
- N. Spotted Owl - Critical Habitat (ds156)



Additionally, the BIOS viewer has several Reference Layers [2] preloaded in the TOC. The viewer also allows the use of additional biogeographic data layers in conjunction with the CNDDDB data layer. The “Add Data: BIOS” button [3] can be used to add other BIOS data layers, such as Critical Habitat layers, vegetation, and other species data layers. More information about the BIOS tools is available under the “Help” button [4].

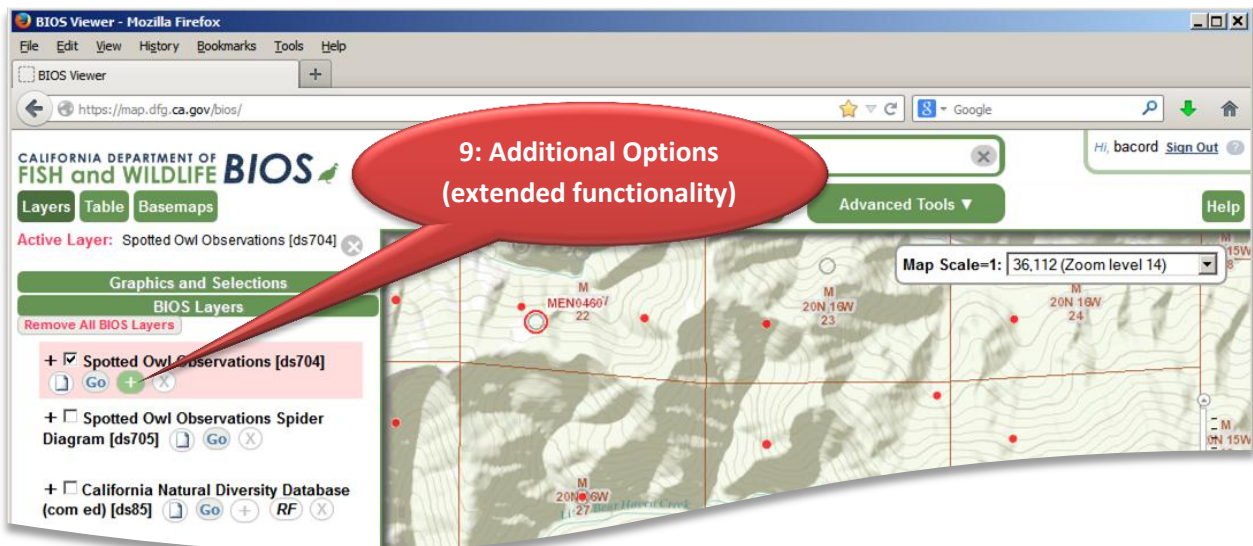
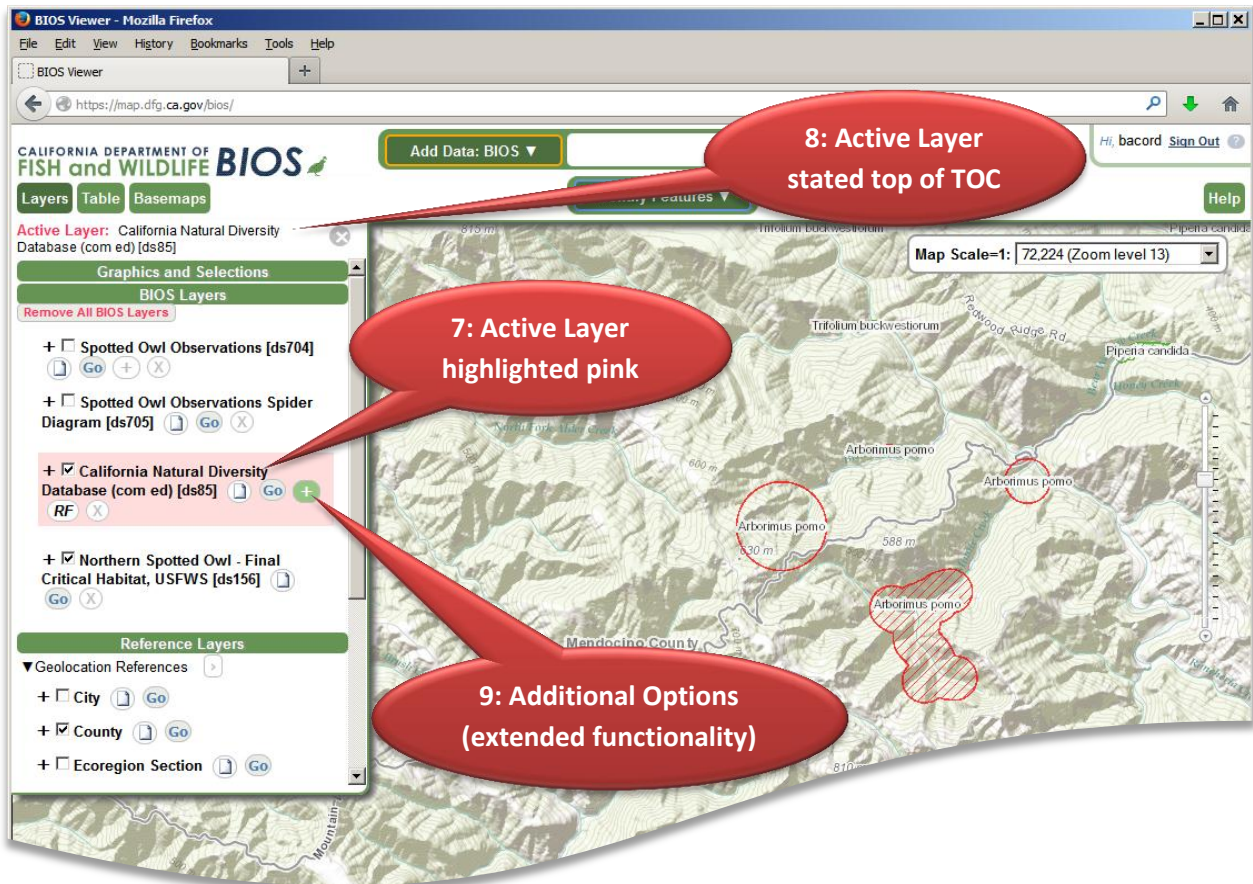
Displaying Layers

Click the checkbox of each layer that you want displayed [5]. It helps to zoom in when displaying the CNDDDB data to avoid long drawing times. The symbology associated with a data set can be expanded in the TOC by clicking the “+” to the left of the layer title [6].



Activating a Layer

Click on the name of a layer to make it the “Active Layer” [7]. The Active Layer will become highlighted in pink and the top of the TOC will state the Active Layer [8]. Only one layer at a time can be active. Some layers have added functionality. Access to this added functionality is through an additional button next to the data set title in the TOC. For the CNDDDB and Spotted Owl data layers, when an appropriate data selection is made, extended functionality buttons [9] appear next to the data set title in the TOC and allow access to special reports.

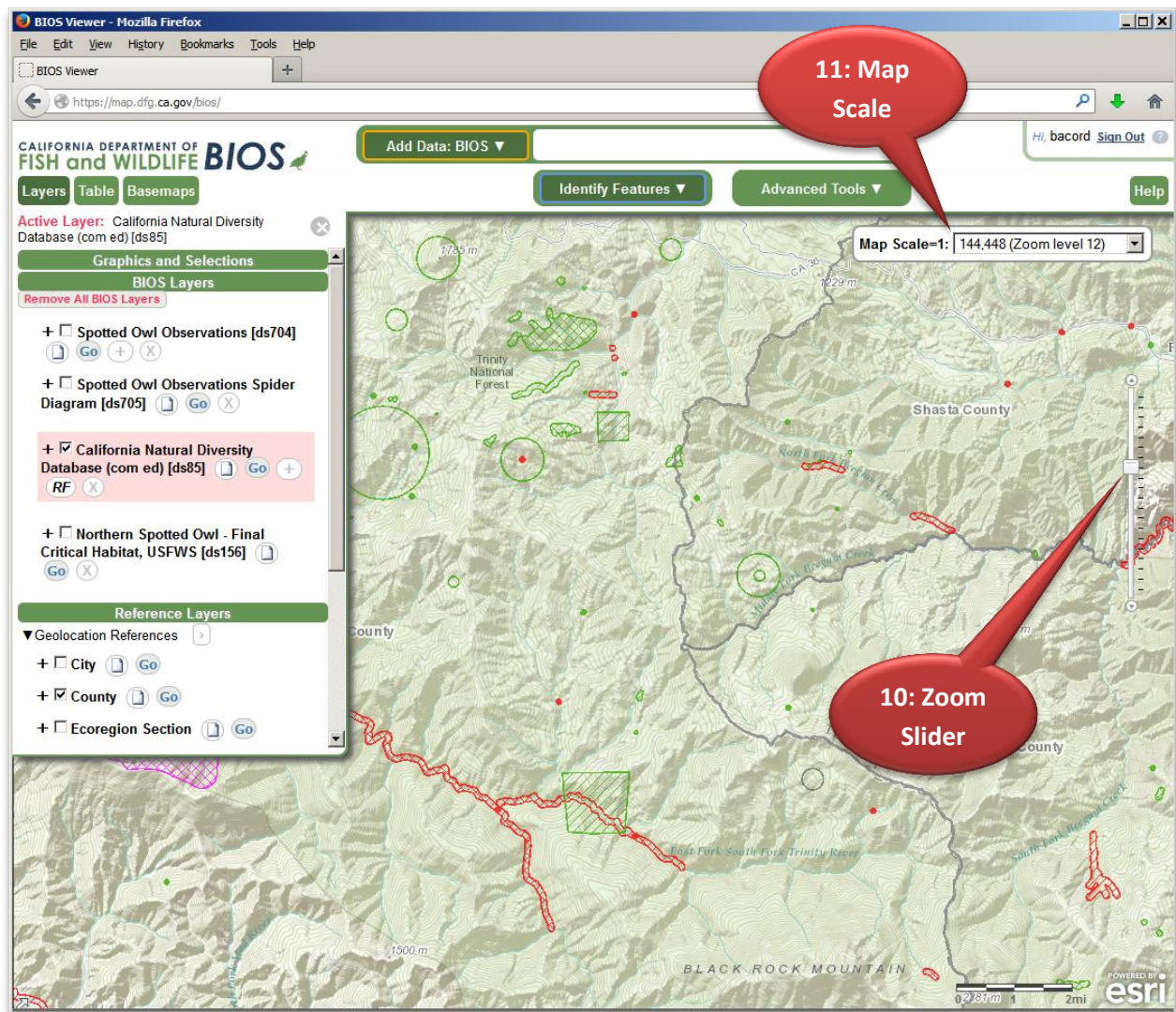


Navigating

Navigation in the new BIOS 5 viewer is achieved with the mouse or keyboard. To zoom in or out:

- Scroll the mouse wheel
- Use the vertical Zoom Slider [10] to the right in the viewer
- Use Shift + click-and-drag to form a box and zoom to that box's area (Ctrl + Shift + click-and-drag zooms out)
- Use the "+" and "-" keys on the keyboard

You can pan the map in any direction by a simple click and drag. If there is a particular reference scale you prefer, you can quickly select a scale from the Map Scale pick list [11]. When the scale is below 1:100,000 (zoom level 13 or greater) the CNDDDB Element Occurrences are labeled with scientific name.



Identifying Features

Click on the layer name you are interested in to make it the Active Layer. From the Map Tools menu [12], select “Identify Features” to get additional information about occurrences by activating (clicking) the tool and then clicking the feature of interest (layer must be Active Layer). A call-out window will return the attributes of the identified feature. If more than one feature is identified, the call-out window will identify how many records are returned [13] and they can be viewed by scrolling down with the vertical scroll bar.

The screenshot shows the BIOS Viewer web application in a Mozilla Firefox browser. The interface includes a top menu bar with 'File', 'Edit', and 'Map Tools'. The 'Map Tools' menu is open, showing 'Identify Features' and 'Advanced Tools'. A red callout bubble points to the 'Identify Features' button, labeled '12: Map Tools menu: Identify Tool'. The main map area displays a topographic map of a region in California, with a yellow boundary and a red circle highlighting a specific feature. A red callout bubble points to the call-out window, labeled '13: Number of records identified'. The call-out window displays the following information:

California Natural Diversity Database (com ed) [ds85]
Lat/Long: 40.80520, -123.24205

Identified 3 record(s)

Record 1:

SCIENTIFIC_NAME: Upland Douglas Fir Forest
COMMON_NAME: Upland Douglas Fir Forest
ELEMENT_CODE: CTT82420CA
OCC_NUMBER: 12
MAPNDX: 07634

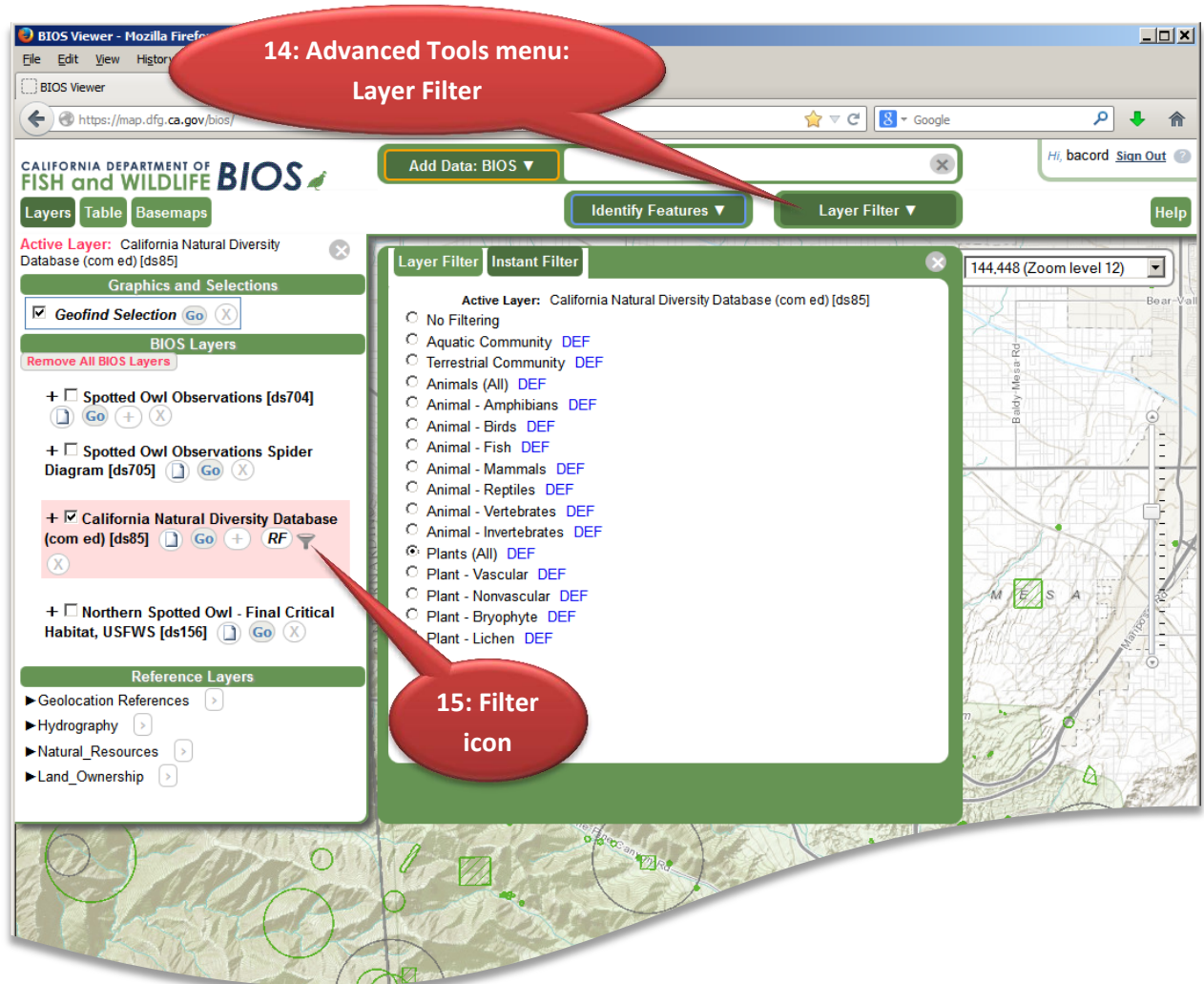
The left sidebar shows the 'Layers' panel with the 'California Natural Diversity Database (com ed) [ds85]' selected as the Active Layer. Other layers include 'Northern Spotted Owl - Final Critical Habitat, USFWS [ds156]'. The 'Reference Layers' panel shows various geolocation references like City, County, Ecoregion Section, Watershed (HUC8), 24K Quad, Zip, PLSS Section, and CDFW Regions. The bottom of the map shows a scale bar and the Esri logo.

Filtering Element Occurrences

One of the most requested feature enhancements by CNDDDB subscribers using BIOS to view the CNDDDB Element Occurrences has been the ability to view subsets or only a specific portion of the CNDDDB data. This may be helpful to make maps clearer to understand where there are many CNDDDB occurrences. For example, one map may be filtered to show only plants, and another map to show only animals for the same location. This ability is now available in the Layer Filter tools under the Advanced Tools menu. Currently there is the easy-to-use Instant Filter and the more advanced Layer Filter.

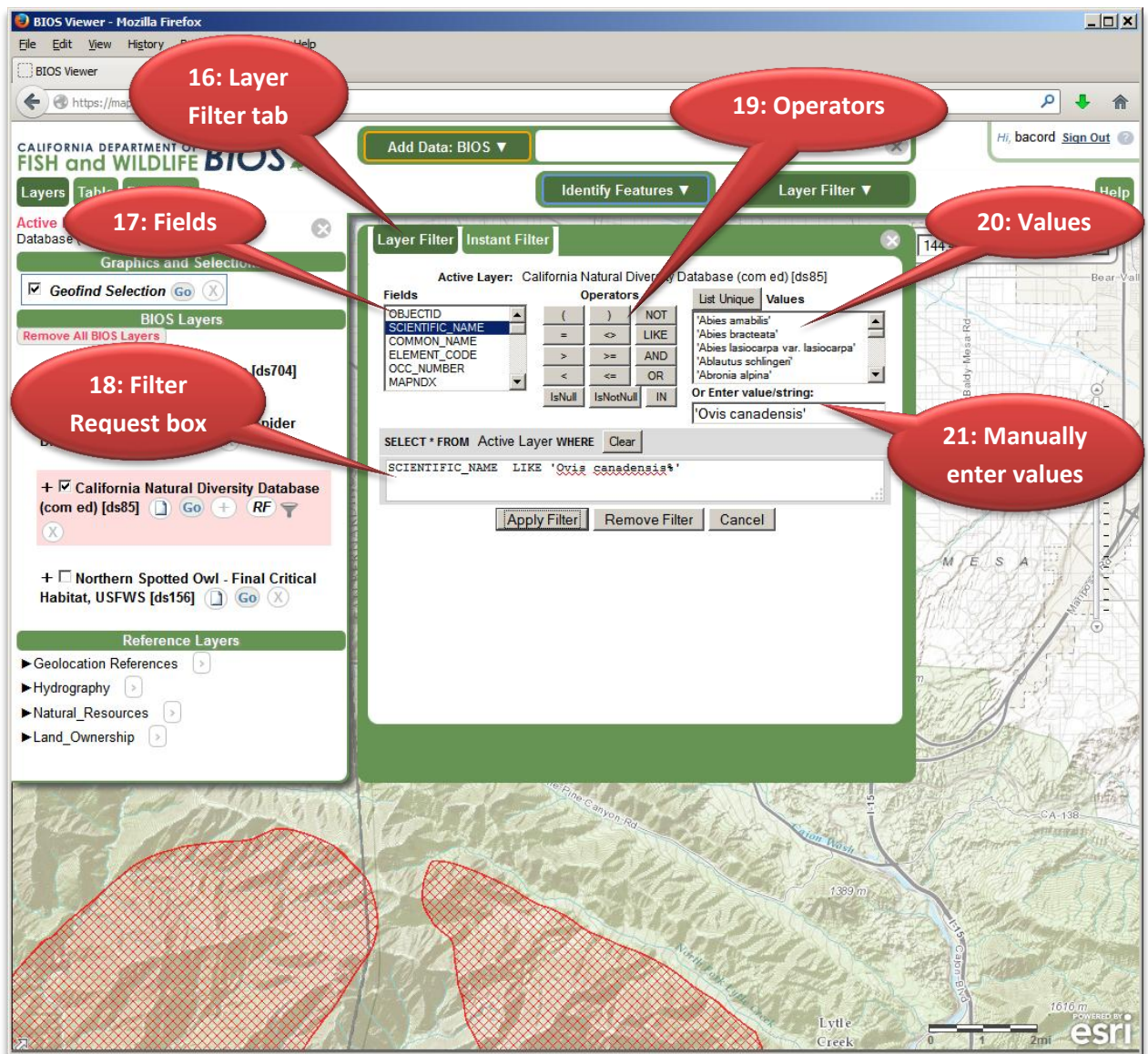
Instant Filter

With the CNDDDB layer set as the Active Layer, expand the Advanced Tools menu [14] and then select Layer Filter. By default, the Layer Filter window will open to the Instant Filter. Here you can easily select to filter the CNDDDB occurrences to view a particular suite of species. The “DEF” next to the predefined filter expands and displays the definition query to filter the data layer. Understanding the syntax of these definition queries may be helpful in creating a more custom filter under the Layer Filter tab of the Layer Filter window. Note that a filter icon [15] shows up next to the filtered layer in the TOC. Hovering over the filter icon displays the filter definition query; clicking the filter icon removes the filter.



Layer Filter

With the CNDDDB layer set as the Active Layer, navigate to the Layer Filter window (Advanced Tools -> Layer Filter) and click the Layer Filter tab [16]. Here you can create a custom filter based on the attribute fields of the CNDDDB data layer. The "Fields" window [17] shows all of the fields in the Active Layer. These are the fields that you can choose from to build a query. Double-click on a field name in the list to add that field to the Filter Request box at the bottom [18] where you will build the query command. A single click on one of the "Operators" [19] will add it to the Filter Request box. It may be useful to review the Operator definitions and descriptions in [Appendix 1](#). Clicking the "List Unique" button will list the Values [20] for a Field. Double-click on a field value to add it to the Filter Request box. You can also manually enter a value in the Filter Request by typing it into the "Enter Value" box [21] and pressing the Enter key on your keyboard. The "Filter Request" box [18] shows the query that will execute when you click on the "Apply Filter" button. This filter is defined by clicking on items in the Fields, Operators, and Values areas above.



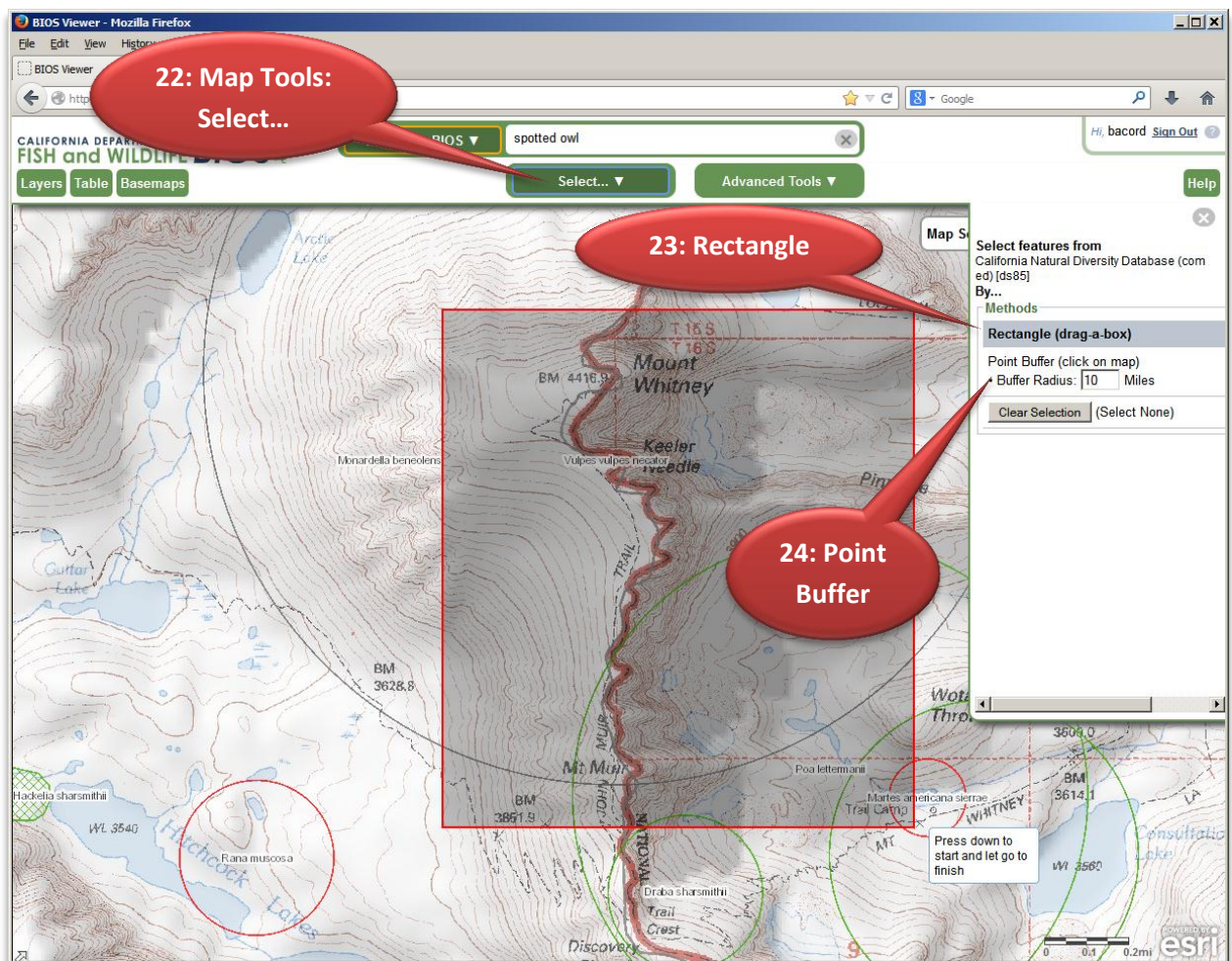
A filter can be constructed to show a specific subset of the CNDDDB data layer, or can be constructed to exclude a portion of the data for display purposes (note: CNDDDB recommends that all CNDDDB tracked species be considered during environmental review and not excluded from analysis). So, the Layer Filter only limits what occurrences are displayed in the BIOS 5 data viewer. The next section covers Selecting occurrences, which provides additional reporting and exporting tools.

Selecting Element Occurrences

CNDDDB Element Occurrence features can be selected either spatially in the map viewer or through a specific query selection. The spatial selection is useful for selecting all the occurrences in a particular area, whereas the query selection may be more specific like all the bird occurrences on a particular quad or county. To select occurrence records from the CNDDDB layer, please make sure the CNDDDB layer is set as the Active Layer.

Selecting EOs – spatial selection

If you want information on a group of occurrences in the same general area, click the Map Tools menu [22] and select “Select...” Two spatial selection methods are available: the standard click-and-drag rectangular box selection [23], and a new point buffer selection [24]. The rectangle spatial selection will select any Element Occurrence that the box touches; the box does not have to completely enclose the occurrence.



Once the selection is made, the selected occurrence will be highlighted [25] in the BIOS map viewer and a table at the bottom of the map viewer will display the details of the selected records [26].

25: Highlighted selection

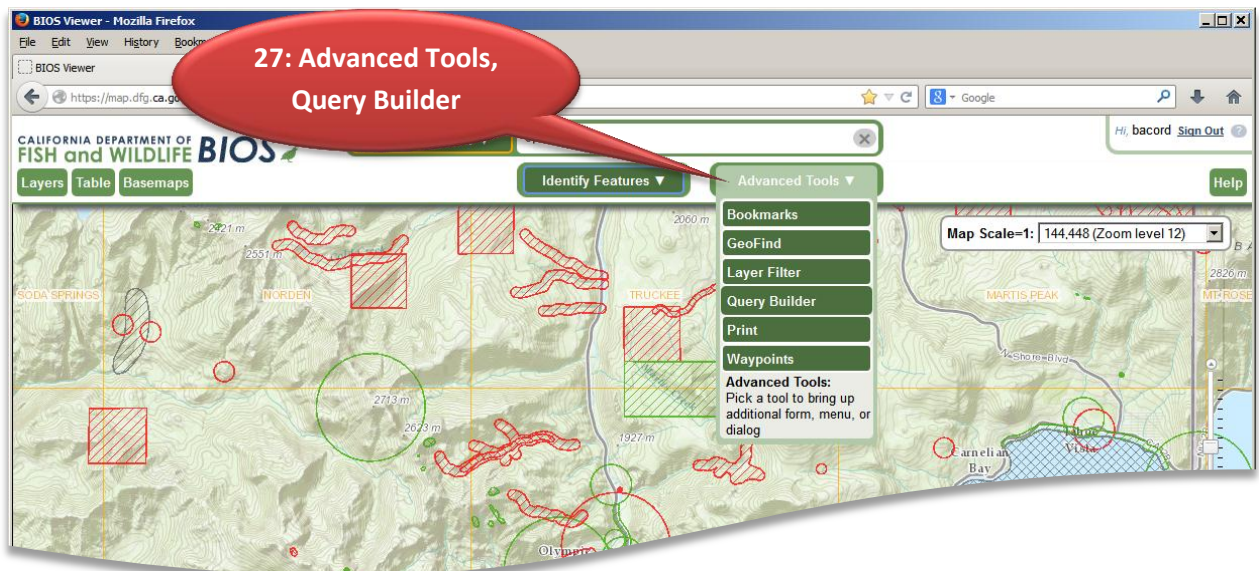
26: Selected records table

California Natural Diversity Database (com ed) [ds85] Query Results: 6 feature(s)

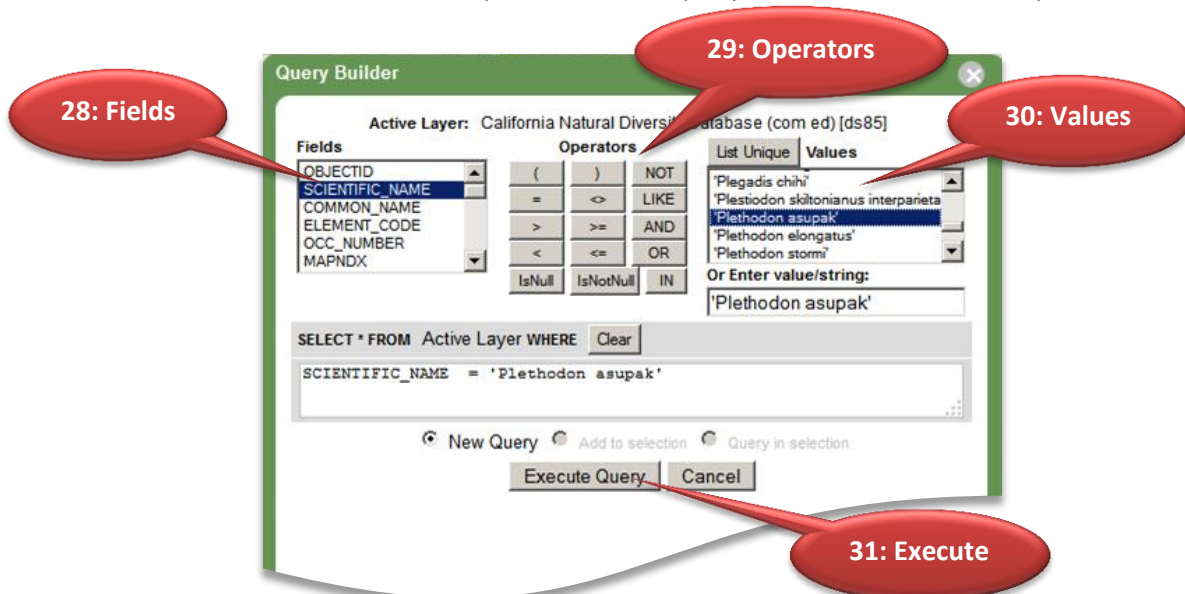
Zoom	SCIENTIFIC NAME	COMMON NAME	ELEMENT CODE	OCC NUMBER	MAPNDX	EONDX	KEY QUAD CODE	KEY QUAD NAME	KEY COUNTY CODE	ACCURACY	PRES
1	Go Monardella beneolens	sweet-smelling monardella	PDLAM180U0	8	75913	87642	3611853	Mount Whitney	INY	1 mile	Presu
2	Go Vulpes vulpes necator	Sierra Nevada red fox	AMAJA03012	107	75913	76920	3611853	Mount Whitney	INY	1 mile	Presu
3	Go Poa lettermanii	Letterman's blue grass	PMPOA4Z1H0	5	83528	84551	3611853	Mount Whitney	INY	3/5 mile	Presu
4	Go Hackelia sharsmithii	Sharsmith's stickseed	PDBOR0G0Q0	2	01923	18178	3611853	Mount Whitney	INY	2/5 mile	Presu
5	Go Draba sharsmithii	Mt. Whitney draba	PDBRA113F0	1	01907	20339	3611853	Mount Whitney	INY	1/5 mile	Presu
6	Go Martes americana sierrae	Sierra marten	AMAJF01014	19	48708	48708	3611853	Mount Whitney	INY	1/10 mile	Presu

Selecting EOs – query selection

You can also select features based upon their attributes by using the Query Builder. Expand the Advanced Tools menu [27] and then select Query Builder. When you click on this tool, the Query Builder window opens.



In the Query Builder window, double-click on one of the attributes in the “Fields” column [28]. Choose (single click) an Operator [29], and then scroll to and double-click, or type in, a Value [30]. Note: typed values must exactly match the listed values. In the example here, the query will search for features that have a Scientific Name of *Plethodon asupak*. To run the query, click the “Execute Query” button [31].



It may be useful to review the Operator descriptions in [Appendix 1](#).

Using Selected Features

Once you've made a selection, either spatially or with the Query Builder, all of the selected features will be highlighted [32]. To zoom to the selected features, click and expand the Graphics and Selections portion of the TOC [33] and click the "Go" button next to the layer selection. A limited amount of text data on each occurrence record is displayed at the bottom of the screen in the table; the table can be minimized or maximized either by clicking the buttons in the top right of the table [34] or directly from the "Table" button above the TOC [35]. For easier viewing of the tabular records, the "Print Preview" button [36] will open a new, larger window with all of the tabular information that is shown at the bottom of the main screen. If you want to clear the current selection, click the "X" button [37] next the layer selection under Graphics and Selections in the TOC (Note: clicking the "X" icon next to the CNDDDB layer name under BIOS Layers will remove the CNDDDB layer).

35: Table button

33: Graphics and Selections

32: Highlighted selection

37: Go button

36: Print Preview button

34: Export button

California Natural Diversity Database (com ed) [ds85] Query Results: 43 feature(s)

Zoom	SCIENTIFIC NAME	COMMON NAME	ELEMENT CODE	OCC NUMBER	MAPNDX	EONDX	KEY QUAD CODE	KEY QUAD NAME	KEY COUNTY CODE	ACCURACY	PRESENCE
1	Plethodon asupak	Scott Bar salamander	AAAAD12560		14 88774	89791	4112371	Hamburg	SIS	1 mile	Presumed
2	Plethodon asupak	Scott Bar salamander	AAAAD12560		15 88775	89796	4112371	Hamburg	SIS	1 mile	Presumed
3	Plethodon asupak	Scott Bar salamander	AAAAD12560		12 50445	50445	4112372	Seiad Valley	SIS	3/5 mile	Presumed
4	Plethodon asupak	Scott Bar salamander	AAAAD12560	29	50483	50483	4112268	Russell Peak	SIS	3/5 mile	Presumed
5	Plethodon asupak	Scott Bar salamander	AAAAD12560	32	50489	50489	4112371	Hamburg	SIS	2/5 mile	Presumed
6	Plethodon asupak	Scott Bar salamander	AAAAD12560	42	88863	89874	4112361	Scott Bar	SIS	2/5 mile	Presumed
7	Plethodon asupak	Scott Bar salamander	AAAAD12560	9	68738	69215	4112268	Russell Peak	SIS	specific area	Presumed

Reports

After Element Occurrence records are selected from the CNDDDB layer, an Element Occurrence Report can be generated. To generate a report, go to the "+" button (Additional Options) next to the layer selection under the TOC's Graphics and Selections or BIOS Layers sections [38]. A Special Functions window pane [39] in the right portion of the map viewer will open up. Click "Occurrence Report" [40]. A small window will pop-up [41] and

notify you that the report is being generated and to wait a little bit. Open your report and then close the pop-up window. Additional report formats and tabular data exports are available using [RareFind 5](#).

The screenshot shows the BIOS Viewer web application in a Mozilla Firefox browser. The interface includes a map of Siskiyou County, Oregon, with several yellow circular markers indicating species locations. On the left, there are panels for 'Layers' and 'Graphics and Selections'. The 'Layers' panel shows the 'California Natural Diversity Database (com ed) [ds85]' layer selected. The 'Graphics and Selections' panel has a 'Remove All BIOS Layers' button and a 'Reference Layers' section with expandable options for Geolocation References, Hydrography, Natural Resources, and Land Ownership. At the top, there are buttons for 'Identify Features' and 'Advanced Tools'. On the right, a 'Special Functions' window is open, showing 'Available Reports' with '#1: Occurrence Report' selected. Below the map, a table displays query results for the selected layer.

38: Additional Options points to the 'Identify Features' and 'Advanced Tools' buttons at the top of the map area.

39: Special Functions window points to the 'Special Functions' panel on the right side of the interface.

40: Run Report points to the '#1: Occurrence Report' button within the 'Special Functions' window.

41: Report Pop-up window points to a separate window titled 'BIOS Report - Mozilla Firefox' which displays a message: 'Generating Report. Please wait for the server to generate the PDF report for download. This process should take less than a minute. Close this window after the PDF has been downloaded.' with a 'Close' button.

Zoom	SCIENTIFIC NAME	COMMON NAME	ELEMENT CODE	OCC NUMBER	MAPNDX	EONDX	KEY QUAD CODE	KEY QUAD NAME	KEY COUNTY CODE	ACCURACY	PRESENCE
1	Plethodon asupak	Scott Bar salamander	AAAAD12560		14 88774	89791	4112371	Hamburg	SIS	1 mile	Presumed
2	Plethodon asupak	Scott Bar salamander	AAAAD12560		15 88775	89796	4112371	Hamburg	SIS	1 mile	Presumed
3	Plethodon asupak	Scott Bar salamander	AAAAD12560		12 50445	50445	4112372	Seiad Valley	SIS	3/5 mile	Presumed
4	Plethodon asupak	Scott Bar salamander	AAAAD12560		29 50483	50483	4112268	Russell Peak	SIS	3/5 mile	Presumed
5	Plethodon asupak	Scott Bar salamander	AAAAD12560		32 50489	50489	4112371	Hamburg	SIS	2/5 mile	Presumed
6	Plethodon asupak	Scott Bar salamander	AAAAD12560		42 88863	89874	4112361	Scott Bar	SIS	2/5 mile	Presumed
7	Plethodon asupak	Scott Bar salamander	AAAAD12560		9 68738	69215	4112268	Russell Peak	SIS	specific area	Presumed
8	Plethodon asupak	Scott Bar salamander	AAAAD12560		11 69751	69224	4112371	Hamburg	SIS	specific area	Presumed

Export Selected Records From BIOS to RareFind

For further analysis or reporting functions, a selected set of Element Occurrences from the CNDDDB layer in BIOS can be exported to RareFind. Either from the Graphics and Selections portion of the TOC or the BIOS Layers section of the TOC, click the "RF" button next to the CNDDDB layer title. This will open RareFind in a new browser window with the selected records loaded. If RareFind is already open in a different browser window, RareFind will reload with your current selection.

Export Selected Records From RareFind to BIOS

The previous demonstration showed how to make a selection of CNDDDB records in the BIOS 5 viewer and then export the results to RareFind 5 (RF5 has more reporting and tabular export functions). Vice versa, a selection can also be made in RareFind 5 and exported to BIOS 5 for better map and data viewing. Further, a PDF map of the data and view displayed in BIOS 5 can be created and saved for printing, emailing, or adding to documents. In the following example, a selection was made in RareFind 5 for Federally Endangered plants and animals in Orange County [42]. The RareFind 5 query returned 14 Elements and 78 Element Occurrences [43] (August 2013 edition).

The screenshot shows the CNDDDB RareFind 5 web interface in a Mozilla Firefox browser. The URL is <https://map.dfg.ca.gov/rarefind/view/RareFind.aspx>. The page title is "CALIFORNIA DEPARTMENT OF FISH and WILDLIFE RareFind". The user is logged in as "bacord" and the version is "Version 5". The interface has a navigation bar with tabs: Query, Results, Occurrence Details, Reports, BIOS, Export/Import, and Help. The "Query" tab is active, and the "Query tool for CNDDDB" is displayed. The query parameters are as follows:

- Clear Query Criteria** (button) **Run Query** (button)
- Taxonomic Group**
 - Arachnids OR Crustaceans OR Insects OR Ferns OR Gymnosperms OR Monocots OR Dicots OR Lichens OR Bryophytes
 - AND Federal Listing Status IS (Endangered)
 - AND County IS (Orange)
- Species Name or Code** (input field)
- Taxonomic Group**
 - ☐ Communities
 - ☒ Animals
 - ☒ Plants
 - ☐ Fungi
- STATUS**
 - Federal/State Listing Status**
 - Federal Listing Status (Select 0 or more)
 - ☒ Endangered ☐ Threatened ☐ Proposed Endangered ☐ Proposed Threatened
 - ☐ Candidate ☐ None ☐ Delisted
 - AND (radio button selected) OR (radio button)
 - State Listing Status (Select 0 or more)
 - ☐ Endangered ☐ Threatened ☐ Rare ☐ None
 - ☐ Delisted ☐ Candidate Endangered ☐ Candidate Threatened
 - Rare Plant Rank** (input field)
 - Global Rank** (input field)

A red callout bubble points to the query parameters with the text "42: Query parameters".

43: Number of Elements & Occurrences

44: BIOS menu

Version 5 | User: bacord | [Signoff](#)

Query Results Occurrences Details Reports BIOS Export/Import Help Query tool for CNDDDB

Elements

Change visible columns 14 elements (78 total) in CNDDDB. ?

Image Search	Scientific Name	name	Code	Occs	Occs	ned	Federal Status	State Status
Case sensitive filter...								
g+ / Ca	Anaxyrus californicus	arroyo toad	AAABB01230	136	8		Endangered	None
g+ / Ca	Astragalus brauntonii	Braunton's milk-vetch	PDFAB0F1G0	34	2		Endangered	None
g+ / Ca	Astragalus pycnostachyus var. lanosis	Ventura Marsh milk-vetch	PDFAB0F7B1	7	1		Endangered	Endangered
g+ / Ca	Branchinecta sandiegonensis	San Diego fairy shrimp	ICBRA03060	67	7		Endangered	None
g+ / Ca	Chloropyron maritimum ssp. maritimum	salt marsh bird's-beak	PDSCR0J0C2	27	4		Endangered	Endangered
g+ / Ca	Empidonax traillii eximius	southwestern willow flycatcher	ABPAE33043	70	4		Endangered	Endangered
g+ / Ca	Eriastrum densifolium ssp. sanctorum	Santa Ana River woollystar	PDPLM03035	22	1		Endangered	Endangered

Occurrences by Selected Element

Change visible columns 8 occurrences returned from a total of 136 occurrences for ANAXYRUS CALIFORNICUS ?

Occ Number	EOnx	Date Element Last Seen	Date Site Last Seen	Presence	Accuracy	County
<input checked="" type="checkbox"/> 1	10146	2002-05-21	2002-05-21	Presumed Extant	Non-specific bounded area	Orange
<input checked="" type="checkbox"/> 2	10144	2001-06-25	2001-06-29	Presumed Extant	Non-specific bounded area	Orange
<input checked="" type="checkbox"/> 3	10145	2007-05-13	2007-05-13	Presumed Extant	Non-specific bounded area	Orange
<input type="checkbox"/> 4	11653	1974-05-18	1974-05-18	Presumed Extant	Circular feature with a 300 meter radius (1/5 mile)	Orange
<input type="checkbox"/> 5	11651	XXXX-XX-XX	XXXX-XX-XX	Presumed Extant	Circular feature with a 300 meter radius (1/5 mile)	Orange
<input type="checkbox"/> 6	10120	1992-08-XX	1992-08-XX	Presumed Extant	Non-specific bounded area	Orange Rivers
<input type="checkbox"/> 37	31405	2009-04-08	2009-04-08	Presumed Extant	Specific bounded area	Orange San D

Once a query selection is made in RareFind 5, it is much easier than in RareFind 3 to export and view the records in the BIOS 5 data viewer. Simply click the RareFind BIOS tab [44] and make one of 4 selections:

- Show map with no selection: This option will simply open the BIOS 5 map viewer in a new window with the CNDDDB layer loaded and turned on.
- Show map with ALL returned occurrences (#): Opens BIOS 5, loads the CNDDDB layer, and selects & zooms to all of the occurrences selected in your RareFind 5 query. The number of occurrences selected is shown in the parentheses.
- Show map with current element's occurrences (#): Opens BIOS 5, loads the CNDDDB layer, and selects & zooms to the occurrences for the current Element highlighted on the RareFind 5 Results tab. The number of occurrences selected is shown in the parentheses. In the above example, this would be the 8 occurrences in Orange County for arroyo toad (*Anaxyrus californicus*).
- Show map with current element's selected occurrences (#): Opens BIOS 5, loads the CNDDDB layer, and selects & zooms to the selected occurrences of the current Element. In the above example, this would be the 3 "checked" occurrences for arroyo toad (*Anaxyrus californicus*) from the query results.

I suspect that users typically will be interested in the second option that shows all the records from their RareFind query. Here's what you'll see when the BIOS 5 window pops-up:

BIOS Viewer - Mozilla Firefox

File Edit View History Bookmarks Tools Help

BIOS Viewer

https://map.dfg.ca.gov/bios/?al=ds45

CALIFORNIA DEPARTMENT OF FISH and WILDLIFE BIOS

Layers Table Basemaps

Active Layer: California Natural Diversity Database (gov ed) [ds45]

Graphics and Selections

☒ California Natural Diversity Database (gov ed) [ds45] Selection Go T + RF X

BIOS Layers

Remove All BIOS Layers

+ ☒ California Natural Diversity Database (gov ed) [ds45] Go + RF X

Reference Layers

► Geolocation References ►

► Hydrography ►

► Natural Resources ►

► Land_Ownership ►

Map Scale=1: 577.791 (Zoom level 10)

RareFind Selection 78 results found.

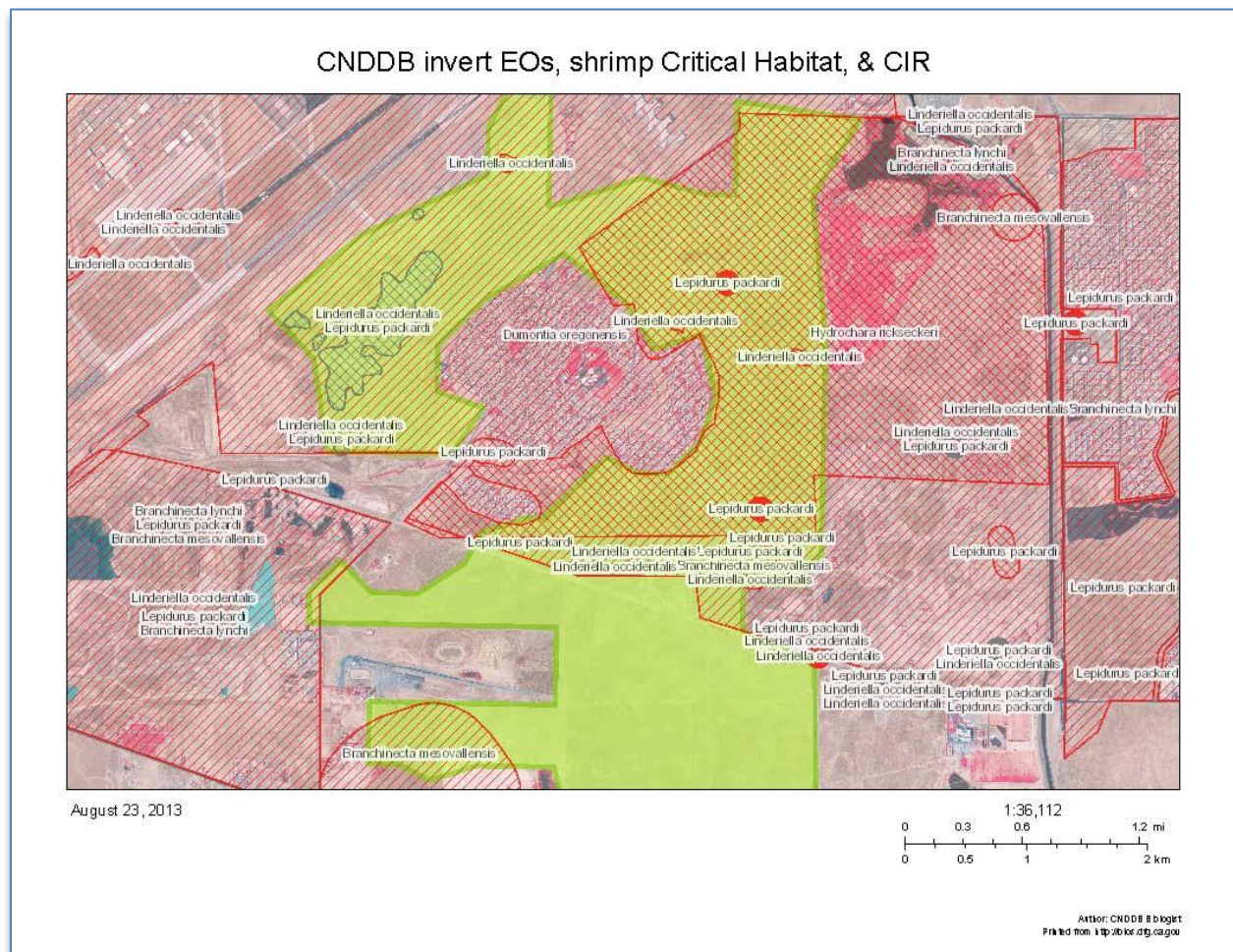
PrintPreview Export

	OBJECTID	SCIENTIFIC NAME	COMMON NAME	ELEMENT CODE	OCC NUMBER	MAPNDX	EONDX	KEY QUAD CODE	KEY QUAD
1	Go	Nasturtium gambelii	Gambel's water cress	PDBRA270V0	13	72461	73431	3311768	Newport B
2	Go	Perognathus longimembris pacificus	Pacific pocket mouse	AMAFD01042	4	39865	34867	3311757	Laguna Be
3	Go	Chloropyron maritimum ssp. maritimum	salt marsh bird's-beak	PDSCR0J0C2	15	26480	3081	3311871	Los Alamit
4	Go	Eriastrum densifolium ssp. sanctorum	Santa Ana River woollystar	PDPLM03035	2	02802	18416	3311776	Black Star
5	Go	Chloropyron maritimum ssp. maritimum	salt marsh bird's-beak	PDSCR0J0C2	5	02270	2503	3311861	Seal Beac
6	Go	Anaxyrus californicus	arroyo toad	AAABB01230	37	36408	31405	3311745	San Cleme
7	Go	Chloropyron maritimum ssp. maritimum	salt marsh bird's-beak	PDSCR0J0C2	6	23778	17521	3311861	Seal Beac
8	Go	Astragalus pycnostachyus var. lanosissimus	Ventura Marsh milk-vetch	PDFAB07B1	1	23778	19298	3311861	Seal Beac

Create PDF of Map & Data

First, navigate to your area of interest, select an appropriate basemap, have the layers turned on that you are interested in showing on your map, and add any labels to your map (Add Label is an option in the Map Tools menu; see the BIOS 5 User Guide under Help). Once you have the view and layers set up the way you like, go to the Advanced Tools menu and select Print (PDF). The Print/PDF window will pop-up where you can enter a Title for the map, the Author of the map, and additional notes in a comment box. Once you have these fields filled-out to your liking, click Set Map Text. The Print/Create PDF button will become activated and you can chose to create a PDF in either landscape or portrait orientation. Just like any other PDF, the map can then be saved and emailed, printed, or added to a document. Below is an example of a map with the CNDDDB filtered for invertebrates and Critical Habitat layers added for vernal pool fairy & tadpole shrimp with a Color Infrared (CIR)

basemap. (Note: at the time of writing, a legend was not included in the map tool; this is being fixed, or is now fixed by the BIOS team.)



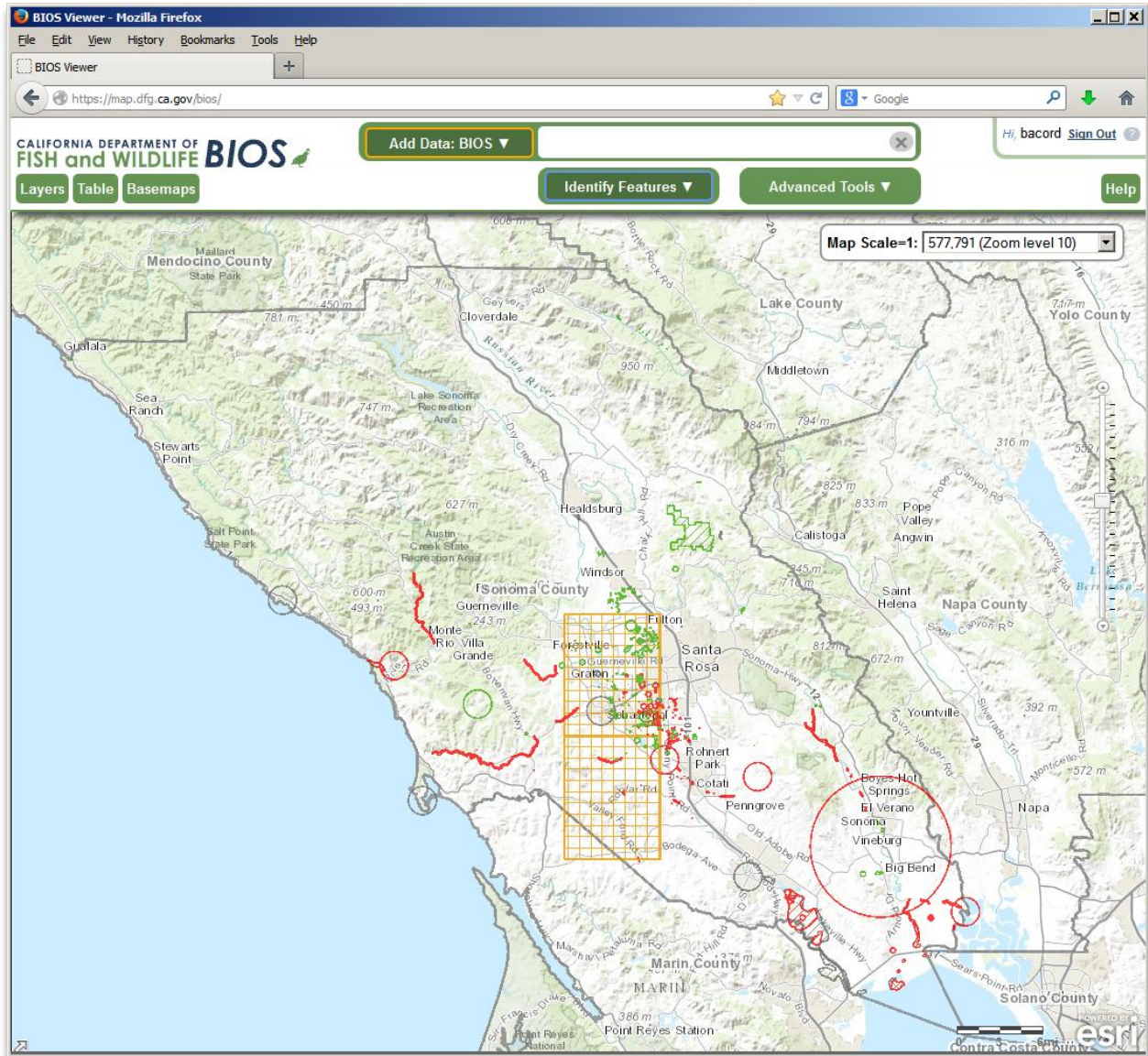
Appendix 1: Operator Descriptions for Query Builder & Layer Filter

<i>Operator</i>	<i>Description</i>	<i>Example Query</i>
=	Equals	Name = 'mount whitney'
<>	Not equal to	Name <> 'mount whitney'
>	Greater than	Elevation > 14000
>=	Greater than or equal to	Elevation >= 14000
<	Less than	Elevation < 400
<=	Less than or equal to	Elevation <= 400
%	Wildcard. Allows for any character(s) at this point in a string of text	Name Like '%whit%'
AND	Joins expressions. Returns records where both are true.	Elevation > 14000 and Name = 'mount whitney'
OR	Joins expressions. Returns records where either is true.	Elevation < 100 or Name = 'mount whitney'
LIKE	Used to find a portion of text, with a wildcard '%'	Name like '%whit%'
NOT	Used to find records without a portion of text	Name not like 'whit%'
IsNull	Returns records with a null (blank) value	Name IsNull
IsNotNull	Returns all records except those with a null (blank) value	Name IsNotNull
IN	Returns records that match a specified list of values in the specified field.	Name IN ('mount whitney', 'mount tam', 'mount shasta')

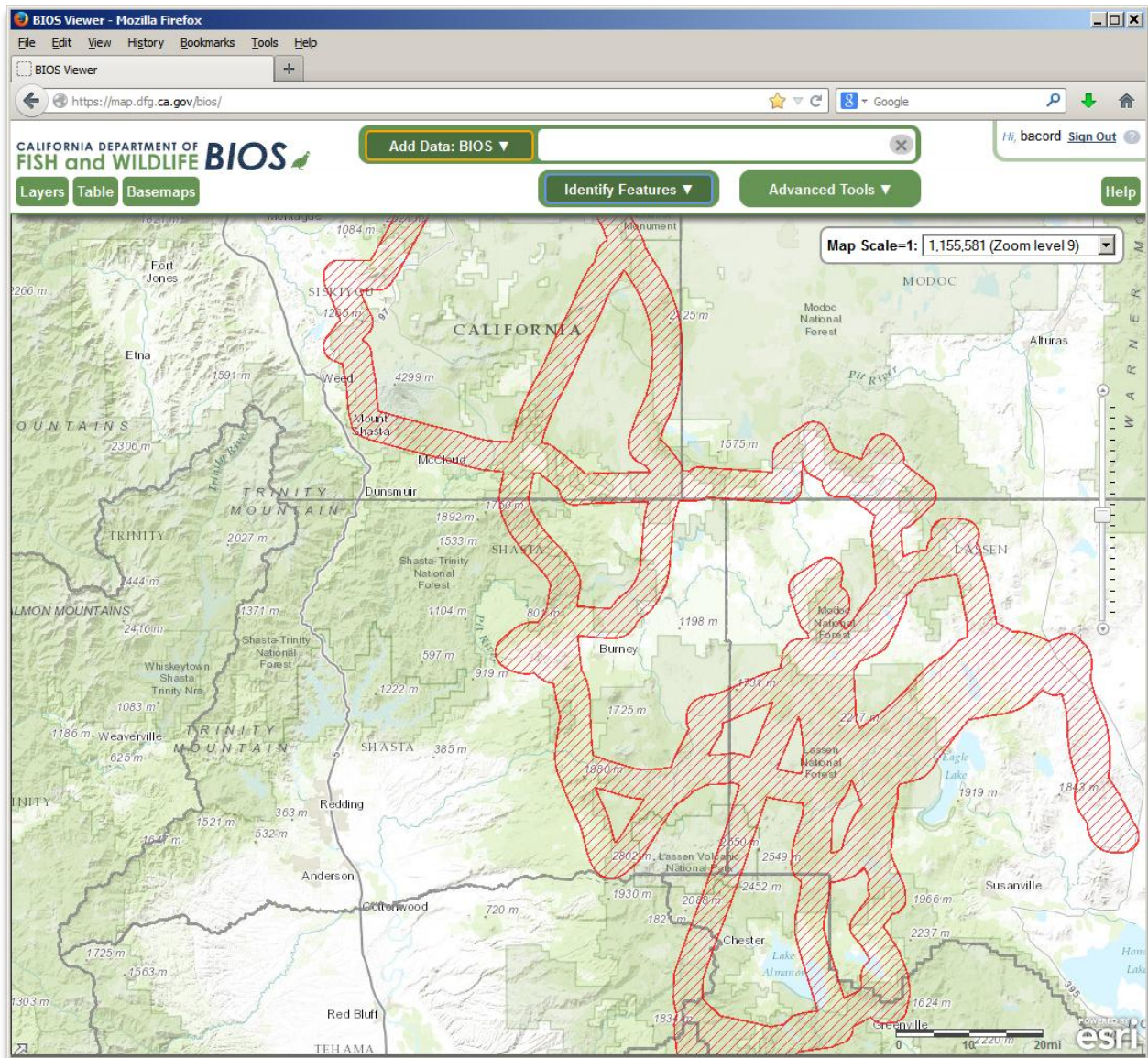
Appendix 2: Layer Filter examples

Here are a few of examples:

- Filter to view State Threatened or Endangered species occurrences in Sonoma County. The filter query string: (CALLIST = 'Endangered' OR CALLIST = 'Threatened') AND KEY_COUNTY_CODE = 'SON'



- Filter to view gray wolf occurrences in California in the past 5 years. Here's the way the filter query will look: `SCIENTIFIC_NAME = 'Canis lupus' AND ELM_DATE > '2008%'`. The map will show one occurrence, a single male gray wolf wandering NE California from Oregon (OR7).



- Because this occurrence is so big, some people may wish to exclude it from their map view to better see other occurrences. So, if we wish to filter out this single gray wolf occurrence:
 - After Identifying the wolf occurrence to get the unique record ID (EONDX), the filter query string will look like: EONDX <> 87716.
 - The map below shows the Chalk Mountain quad without the OR7 wolf occurrence, but all other CNDDDB occurrences.

